

10/593,034

TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference AY05-0208W01	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/JP2005/002224	International filing date (day/month/year) 15.02.2005	Priority date (day/month/year) 19.03.2004
International Patent Classification (IPC) or national classification and IPC C30B29/40 (2006.01), H01L21/205 (2006.01)		
Applicant NIPPON MINING & METALS CO., LTD.		

<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of _____ sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____ containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>	
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>	

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2005/002224

Box No. I

Basis of the report

1. With regard to the language, this report is based on:

- ☒ the international application in the language in which it was filed
- ☐ the translation of the international application into _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rule 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

- ☒ the international application as originally filed/furnished
- ☐ the description:
- pages _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ the claims:
- nos. _____ as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* _____ received by this Authority on _____
- nos.* _____ received by this Authority on _____
- ☐ the drawings:
- sheets _____ as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to sequence listing (specify): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to sequence listing (specify): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2005/002224

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
1. Statement	
Novelty (N)	Claims 1-5 YES Claims NO
Inventive step (IS)	Claims YES Claims 1-5 NO
Industrial applicability (IA)	Claims 1-5 YES Claims NO
2. Citations and explanations (Rule 70.7)	<p>Document 1: JP 2750331 B2 (Japan Energy Corp.), 27 February 1998, claim 1, paragraph [0005] & EP 567329 A2 & US 5434100 A</p> <p>Document 2: JP 2-229796 A (Sumitomo Electric Ind., Ltd.), 12 September 1990, page 2, lower left column, lines 2 to 8; page 3, upper right column, line 20 to lower left column, line 5; fig. 3 (Family: none)</p> <p>Document 3: JP 9-278582 A (Showa Denko Kabushiki Kaisha), 28 October 1997, claim 1, paragraph [0017] (Family: none)</p> <p>The invention set forth in claims 1 to 5 does not involve an inventive step in the light of documents 1 and 3, which are cited in the international search report, and document 2, which is cited in the second written opinion. It would have been easy for a person skilled in the art to apply the technique disclosed in document 2, whereby an epitaxial layer is grown upon a wafer that has been subjected to a mirror-finishing process, and the techniques disclosed in documents 2 and 3, whereby the InP substrate is made to have a dislocation density of 500/cm² or less, in the invention disclosed in document</p>

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2005/002224

Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

1. Furthermore, it is considered to be possible to produce InP substrates that have the haze value set forth in claim 1 or claim 2 as a result of applying the techniques in question.

様式PCT/IPEA/409 (表紙) (2005年4月)

第 I 欄 報告の基礎

1. 言語に関し、この予備審査報告は以下のものを基礎とした。

- ☒ 出願時の言語による国際出願
☐ 出願時の言語から次の目的のための言語である _____ 語に翻訳された、この国際出願の翻訳文
☐ 国際調査 (PCT 規則 12.3(a) 及び 23.1(b))
☐ 国際公開 (PCT 規則 12.4(a))
☐ 国際予備審査 (PCT 規則 55.2(a) 又は 55.3(a))

2. この報告は下記の出願書類を基礎とした。(法第 6 条 (PCT 14 条) の規定に基づく命令に回答するために提出された差替え用紙は、この報告において「出願時」とし、この報告に添付していない。)

☒ 出願時の国際出願書類

☐ 明細書

第 _____ ページ、出願時に提出されたもの
 第 _____ ページ*、 _____ 付けで国際予備審査機関が受理したもの
 第 _____ ページ*、 _____ 付けで国際予備審査機関が受理したもの

☐ 請求の範囲

第 _____ 項、出願時に提出されたもの
 第 _____ 項*、PCT 19 条の規定に基づき補正されたもの
 第 _____ 項*、 _____ 付けで国際予備審査機関が受理したもの
 第 _____ 項*、 _____ 付けで国際予備審査機関が受理したもの

☐ 図面

第 _____ ページ/図、出願時に提出されたもの
 第 _____ ページ/図*、 _____ 付けで国際予備審査機関が受理したもの
 第 _____ ページ/図*、 _____ 付けで国際予備審査機関が受理したもの

☐ 配列表又は関連するテーブル

配列表に関する補充欄を参照すること。

3. ☐ 補正により、下記の書類が削除された。

☐ 明細書 第 _____ ページ
☐ 請求の範囲 第 _____ 項
☐ 図面 第 _____ ページ/図
☐ 配列表 (具体的に記載すること) _____
☐ 配列表に関連するテーブル (具体的に記載すること) _____

4. ☐ この報告は、補充欄に示したように、この報告に添付されかつ以下に示した補正が出願時における開示の範囲を超えてされたものと認められるので、その補正がされなかったものとして作成した。(PCT 規則 70.2(c))

☐ 明細書 第 _____ ページ
☐ 請求の範囲 第 _____ 項
☐ 図面 第 _____ ページ/図
☐ 配列表 (具体的に記載すること) _____
☐ 配列表に関連するテーブル (具体的に記載すること) _____

* 4. に該当する場合、その用紙に "superseded" と記入されることがある。

第V欄 新規性、進歩性又は産業上の利用可能性についての法第12条(PCT35条(2))に定める見解、それを裏付ける文献及び説明

1. 見解

新規性(N)	請求の範囲 1-5	有
	請求の範囲	無
進歩性(IS)	請求の範囲	有
	請求の範囲 1-5	無
産業上の利用可能性(IA)	請求の範囲 1-5	有
	請求の範囲	無

2. 文献及び説明(PCT規則70.7)

文献1: JP 2750331 B2 (株式会社ジャパンエナジー)
1998.02.27, 請求項1, 段落【0005】
& EP 567329 A2 & US 5434100 A

文献2: JP 2-229796 A (住友電気工業株式会社)
1990.09.12, 第2頁左下欄第2行-第8行, 第3頁右上欄第20行-左下欄第5行, 第3図
(ファミリーなし)

文献3: JP 9-278582 A (昭和電工株式会社)
1997.10.28, 請求項1, 段落【0017】
(ファミリーなし)

請求の範囲1-5に係る発明は、国際調査報告で引用された文献1、3と2回目の見解書で引用された文献2とにより進歩性を有しない。文献2に記載された、鏡面加工を施したウェハにエピタキシャル層を成長させる技術、及び文献2、3に記載された、InP基板の転位密度を $500/\text{cm}^2$ 以下とする技術を、文献1に記載された発明に適用することは、当業者にとって容易であり、かかる技術を適用することにより、請求の範囲1、2に記載されたヘイズ値を有するInP基板が得られるものと認められる。